TRC
Customer-Focused Solutions

February 24, 2005 Project No. 41-0419-13

Mr. Craig Hunt
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

SITE: GEORGIA PACIFIC FORMER SAWMILL SITE
90 WEST REDWOOD AVENUE
FORT BRAGG, CALIFORNIA

RE: GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2004

Dear Mr. Hunt:

On behalf of Georgia Pacific Corporation (G-P), TRC has prepared this report to document the results of quarterly groundwater monitoring conducted December 7 through December 9, 2004 (Figure 1). Additionally, this report will summarize findings of previous monitoring and samplings events in order to support the abandonment of 22 monitoring wells located on the Site. This work was performed as part of site assessment activities conducted at the Fort Bragg Facility, as detailed in TRC's *Phase I Environmental Site Assessment* (TRC, 2004) and TRC's *Phase II Environmental Site Assessment Report* (TRC, 2004).

Field activities, conducted by TRC, included measurements of depth to groundwater, groundwater purging, and collection of groundwater samples. All field activities were conducted in accordance with the Field Procedures described in Attachment A.

1.0 GROUNDWATER ELEVATIONS

Prior to purging, TRC collected depth-to-groundwater measurements. Copies of TRC's field data sheets are included in Attachment B. Groundwater elevation data collected since January 2004 are summarized in Table 1. On the basis of the measurements taken on December 7, 2004, groundwater in northern portion of the Site (Parcels 2, 3, 4, and 5) flows toward the southwest (Figure 2). The groundwater flow direction in the southern portion of the Site (Parcel 10) also appears to also be toward the southwest during the December 2004 event (Figure 3).

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GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples were collected from twenty-seven monitoring wells located in Parcel 2 (MW-2.1 through MW-2.3), Parcel 3 (MW-3.1 through MW-3.9), Parcel 4 (MW-4.1 through 4.2 and MW-4.4), Parcel 5 (MW-5.2 through MW-5.9), Parcel 7 (MW-7.1), and Parcel 10 (MW-10.1, MW-10.2, and MW-10.4) on December 8 and 9, 2004. During monitoring activities, 0.01 feet of liquid-phase hydrocarbons (LPH) were detected in monitoring well MW-5.1. Per TRC sampling protocol, the product was subsequently bailed out and a groundwater sample was not collected. Field technicians were unable to locate Monitoring Well MW-4.3. Due to demolition activities occurring in this area of Parcel 4, additional cover material and/or debris were placed on the apparent location of this well. Additionally, monitoring well MW-10.3 was dry during monitoring and sampling events.

Additional efforts will be made by others to locate Monitoring Well MW-4.3 during the First Quarter 2005 monitoring and sampling event.

The sampling and analysis plan adopted for the Fourth Quarter 2004, consisted of the following analyses for all monitoring wells sampled:

- Total petroleum hydrocarbons as diesel (TPH-D) with silica gel cleanup (SGCU) by EPA Method 8015B
- Total petroleum hydrocarbons as motor oil (TPH-mo) with SGCU by EPA Method 8015B
- Total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 8015B
- Total oil and grease (O&G) by EPA Method 1664A
- Volatile organic compounds (VOCs) by EPA Method 8260 B
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270C
- Organochlorine pesticides by EPA Method 8081A
- Polychlorinated biphenyls (PCBs) by EPA Method 8082
- Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8310
- Metals by EPA Method 6010B and 7471
- Tannin and lignin.

2.0 RESULTS

Analytical results reported since January 2004 are summarized in Tables 2 through 9. The laboratory reports and chain-of-custody forms for the current sampling events are contained in Attachment C.

Parcel 2

Resaw No.5, Glue Lam, Dry Shed No.2, and Helicopter Landing Pad

Three monitoring wells (MW-2.1, MW-2.2, and MW-2.3) are located in the Resaw No.5, Glue Lam, Dry Shed No.2, and Helicopter Landing Pad areas of Parcel 2. Concentrations of TPH-G, TPH-D, TPH-mo, O&G, VOCs, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected at or above laboratory detection limits, in groundwater samples collected from monitoring wells MW-2.1 through MW-2.3. Detectable concentrations of metals are below the conservative California Department of Health Services (DHS) maximum contaminant levels (MCLs), which are often used as a screening measure of site cleanup, in groundwater samples collected from Parcel 2.

Concentrations of tannin and lignin were detected slightly above laboratory detection limits in groundwater samples MW-2.1 (0.18 mg/l) and MW-2.2 (0.10 mg/l). Groundwater sample collected from Monitoring Well MW-2.3 did not contain concentrations of tannin and lignin at or above the laboratory detection limit.

Parcel 3

Former Mobile Equipment Shop

Three monitoring wells (MW-3.1, MW-3.2, and MW-3.3) are located in the Former Mobile Equipment Shop area of Parcel 3. Concentrations of TPH-G, O&G, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected at or above laboratory detection limits, in groundwater samples collected from the Former Mobile Equipment Shop area of Parcel 3. Groundwater sample collected from monitoring well MW-3.2 contained concentration of TPH-D (560 µg/l) above the RWQCB advisory goal of 100 µg/l. Concentrations of TPH-mo were detected above the RWQCB advisory goal in monitoring wells MW-3.3 (760 µg/l).

Detectable concentrations of metals were limited to Barium (22 µg/l to 110 µg/l) and Zinc (20 µg/l to 50 µg/l) in groundwater samples collected from the Former Mobile Equipment Shop area of Parcel 3 are well below DHS MCLs of 1000 µg/l and 5000 µg/l, respectively

Monitoring well MW-3.3 contained concentration of isopropylbenzene (1.6 µg/l), propylbenzene (1.2 µg/l), and 1,2,4-trimethylbenzene (2.3 µg/l) below the USEPA Region 9 PRG values for tap water (660 µg/l, 240 µg/l, and 12 µg/l, respectively). DHS does not have any established MCLs for these constituents.

Detectable concentrations of other VOCs in groundwater samples collected from the Former Mobile Equipment Shop area of Parcel 3 are below DHS MCLs.

Groundwater samples collected from monitoring wells MW-3.2 and MW-3.3 contained concentration of tannin and lignin (0.86 and 0.19 mg/l, respectively).

Machine Shop

Three monitoring wells (MW-3.4, MW-3.5, and MW-3.6) are located in the Machine Shop area of Parcel 3. Concentrations of TPH-G, TPH-D, TPH-mo, O&G, VOCs, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected at or above laboratory detection limits, in groundwater samples collected from the Former Machine Shop area of Parcel 3.

Detectable concentrations of metals in groundwater samples collected from the Machine Shop area of Parcel 3 are below DHS MCLs.

Tannin and lignin concentrations in groundwater sample collected from monitoring wells from the machine shop area of Parcel 3 ranged from 0.18 mg/l (MW-3.5) to 0.66 mg/l (MW-3.4).

Former Planer No. 50

Three monitoring wells (MW-3.7, MW-3.8, and MW-3.9) are located in the Former Planer No.50 area of Parcel 3. Concentrations of TPH-G, TPH-D, TPH-mo, O&G, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected at or above laboratory detection limits, in groundwater samples collected from monitoring wells MW-3.7 through MW-3.9.

Detectable concentrations of metals in groundwater samples collected from the Former Planer No.50 area of Parcel 3 are below DHS MCLs.

VOCs were not detected at or above laboratory detection limits in groundwater samples collected from monitoring wells MW-3.8 and MW-3.9. Concentration of methyl-tert-butyl-ether (MTBE) in the groundwater sample collected from monitoring well MW-3.7 (0.5 µg/l) is below the DHS MCL (13 µg/l). Other VOCs were not detected at or above the laboratory detection limits in monitoring well MW3.7.

Tannin and lignin concentrations were not detected at or above laboratory detection limits in groundwater samples collected from monitoring wells MW-3.7 and MW-3.8. Monitoring well MW-3.9 contained tannin and lignin concentrations (0.19 mg/l) slightly above the laboratory detection limit.

Parcel 4

Power House

Four monitoring wells (MW-4.1, MW-4.2, MW-4.3, and MW-4.4) are located in the Power House Area of Parcel 4. As stated above, MW-4.3 could not be located due to equipment dismantling activities in the Power House area of Parcel 4. Concentrations of TPH-G, TPH-D, O&G, VOCs, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected at or above laboratory detection limits, in groundwater samples collected from monitoring wells located in the Power House area of Parcel 4. Groundwater collected from monitoring well MW-4.4 contained concentrations of TPH-mo (320 µg/l) slightly above the laboratory detection limit (300 µg/l). Concentrations of tannin and lignin were detected in monitoring wells MW-4.1 (4.5 µg/l), MW-4.2 (1.9 µg/l), and MW-4.4 (2.0 µg/l).

Detectable concentrations of metals in groundwater from monitoring wells MW-4.2 and MW-4.4 are below DHS MCLs. Concentrations of barium were detected, above the MCL value of 1,000 µg/l, in groundwater sample collected from monitoring well MW-4.1 (9,600 µg/l). Detectable concentrations of other metals in groundwater collected from MW-4.1 are below DHS MCLs.

Parcel 5

Mobile Equipment Shop

Five monitoring wells (MW-5.1, MW-5.2, MW-5.3, MW-5.4, and MW-5.5) are located in the Mobile Equipment Shop area of Parcel 5. As stated above, 0.01 feet of LPH were detected in monitoring well MW-5.1. Therefore, per TRC sampling protocol, the LPH was bailed out and a groundwater sample was not collected.

Concentrations of TPH-G, O&G, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected at or above laboratory detection limits in groundwater samples collected from monitoring wells MW-5.2 through MW-5.5. Groundwater samples collected from monitoring well MW-5.5 contained concentrations of TPH-D (370 µg/l) and TPH-mo (1,700 µg/l). TPH-D and TPH-mo concentrations were not detected at or above laboratory detection limits in groundwater samples MW-5.2 through MW-5.4.

Detectable concentrations of VOCs and metals in groundwater samples collected from the Mobile Equipment Shop area of Parcel 5 are below DHS MCLs.

Concentrations of tannin and lignin ranged from 0.12 mg/l (MW-5.2) to 1.6 mg/l (MW-5.5).

Former Sawmill No. 1

Four monitoring wells (MW-5.6, MW-5.7, MW-5.8, and MW-5.9) are located in the Former Sawmill No. 1 area of Parcel 5. Concentrations of TPH-G, TPH-D, TPH-mo, O&G, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected at or above laboratory detection limits in groundwater samples collected from monitoring wells MW-5.6 through MW-5.9.

Detectable concentrations of VOCs and metals in groundwater samples collected from the Former Sawmill No.1 area of Parcel 5 are below DHS MCLs.

Concentrations of tannin and lignin ranged from 0.23 mg/l (MW-5.8) to 6.2 mg/l (MW-5.6).

Parcel 7

Sawmill No.2

One monitoring well (MW-7.1) is located in the Sawmill No.2 area of Parcel 7. TPH-G, TPH-D, TPH-mo, O&G, VOCs, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected, at or above laboratory detection limits, in the groundwater sample collected from monitoring well MW-7.1. Concentration tannin and lignin (2.0 mg/l) were detected in the groundwater sample collected from MW-7.1.

Detectable concentrations of metals in groundwater samples collected from the Sawmill No.2 area of Parcel 7 are below DHS MCLs.

Parcel 10

Fill Material Area

Four monitoring wells (MW-10.1, MW-10.2, MW-10.3, and MW-10.4) are located in the Fill Material area located in Parcel 10. As stated above, monitoring well MW-10.3 was dry during the December 2004 monitoring and sampling event. TPH-G, TPH-D, TPH-mo, O&G, VOCs, SVOCs, PCBs, PAHs, and organochlorine pesticides were not detected, at or above laboratory detection limits in groundwater samples collected from monitoring wells MW-10.1, MW-10.2, and MW-10.4. Concentrations of tannin and lignin were detected in monitoring wells MW-10.1 (0.15 mg/l), MW-10.2 (0.38 mg/l), and MW-10.4 (4.2 mg/l).

Detectable concentrations of metals in groundwater samples collected from the Fill Material area of Parcel 10 are below the conservative DHS MCLs.

3.0 CONCLUSIONS

Based on the data obtained from the four quarterly monitoring and sampling events conducted in 2004, the following conclusions were made:

- Groundwater data collected during quarterly 2004 monitoring and sampling events suggests a relatively consistent groundwater flow direction and gradient at the Site. On the basis of the measurements taken during the First through Fourth Quarters 2004, groundwater in northern portion of the Site (Parcels 2, 3, 4, and 5) flows toward the southwest. During the same time period, the groundwater flow direction in the southern portion of the Site (Parcel 10) also appears to also be toward the southwest.

- Historic and current data suggests that groundwater at the Resaw No. 5, Glue Lam, Dry Shed No.2, and Helicopter Landing Pad areas of Parcel 2; the Machine and Former Planer No. 50 areas of Parcel 3; the Power House area of Parcel 4; the Former Sawmill No. 1 area of Parcel 5; the Sawmill No.2 area of Parcel 7; and the Fill Material Area of Parcel 10 are not impacted with TPH-G, TPH-D, TPH-mo, O&G, VOCs, SVOCs, PCBs, PAHs, and organochlorine pesticides.

- During the First and Second Quarters of 2004 low levels of TPH-G (110 and 60 µg/l, respectively) were detected in monitoring well MW-2.3 (Resaw No.5), however during the Third and Fourth quarter events TPH-G was not detected at or above the laboratory detection limits. Additionally, other TPH compounds, such as BTEX and MTBE, have not been detected in the area. Based on the relatively low concentrations detected and the lack of other TPH-G indicators, the groundwater in Parcel 2 does not appear to be impacted with TPH-G.

- During the Second Quarter 2004, low levels of TPH-D (150 µg/l) were detected in monitoring well MW-3.9 (Former Planer No. 50). However, TPH-D was not detected at or above the laboratory detection limits during the First, Third, or Fourth quarter events. Based on the previous and subsequent sampling data the TPH-D concentration detected during the Second Quarter 2004 event appears to be anomalous, possibly due to equipment or sample cross contamination.

- During the First Quarter 2004 monitoring and sampling event, low levels of TPH-D (76 µg/l), below the RWQCB advisory goal of 100 µg/l, was detected in monitoring well MW-4.3. During the Fourth Quarter 2004 event, TPH-mo was detected slightly above the laboratory detection limit in monitoring well MW-4.4 (320 µg/l). Based on the relatively low concentration of TPH-D detected, the groundwater in Parcel 4 does not appear to be impacted with TPH-D. However, additional data regarding possible TPH-mo impacts to Parcel 4 groundwater may be required.

- Historical and current data suggests elevated TPH-D and TPH-mo concentrations, above the RWQCB advisory goal of 100 µg/l, are limited to the Former Mobile Equipment Shop area of Parcel 3 (MW-3.2 and MW-3.3) and the Mobile Equipment Shop area of Parcel 5 (MW-5.1 and MW-5.5).

- During the Third Quarter 2004 Monitoring and sampling event MTBE (40 µg/l) was detected in the Former Mobile Equipment Shop area of Parcel 3 (MW-3.1), which was above the DHS MCL value of 13 µg/l. However, the maximum MTBE concentration detected in the Former Mobile Equipment Shop area of Parcel 3 during the most recent monitoring and sampling event was 7.9 µg/l, which is below the DHS MCL.

- During the August 17, 2004 sampling event, concentration of benzene was detected in monitoring well MW-10.2 (3.3 µg/l). However, benzene was not detected at or above the laboratory detection limits during the Third and Fourth Quarter Monitoring Events. Based on the subsequent sampling data the benzene concentration detected during the August 17, 2004 event appears to be anomalous, possibly due to equipment or sample cross contamination.

- During the Third Quarter Monitoring and Sampling event low levels of the PAH phenanthrene was detected in MW-5.7 (0.26). There are no established DHS MCLs or USEPA Region 9 PRG values for phenanthrene. However, during the Fourth Quarter 2004 event phenanthrene was not detected at or above the laboratory detection limit in MW-5.7. Based on the low levels of phenathrene detected during the Third Quarter and the non-detectable concentrations in the Fourth Quarter, there does not appear to be phenanthrene impacts to Site groundwater.

- Detectable concentrations of other VOCs and PAHs in groundwater samples collected from the Former Fort Bragg Sawmill Site during current and past sampling events have either been below DHS MCLs or USEPA Region 9 PRG value for tap water.

- Barium concentrations above the DHS MCL (1,000 µg/l) have been detected only in monitoring well MW-4.1 during the Third (3,300 µg/l) and Fourth (9,600 µg/l) Quarter events. Berylium concentrations above the DHS MCL (4 µg/l) were detected during the Second Quarter 2004 monitoring event in well MW-10.1 (4.7 µg/l) and MW-4.2 (4.2 µg/l). Berylium concentrations have not been detected at or above laboratory detection limits during subsequent events. Concentrations of other metals in groundwater samples collected from the Former Fort Bragg Sawmill Site have historically been below conservative DHS MCLs, which are often used as a screening measure of site cleanup.

4.0 RECOMMENDATIONS

With the understanding that some additional groundwater characterization will be required by the RWQCB, GP will continue the quarterly groundwater monitoring**.**

Please contact Julie Raming at (404) 652-6869 if you have any questions or comments regarding this report.

Sincerely,

Mohammad Bazargani, P.E.
Senior Associate

Steve Kemnitz
Project Scientist

ATTACHMENTS:

Table 1: Summary of Groundwater Elevations
Table 2: Summary of Groundwater Analytical Results – Petroleum Hydrocarbons
Table 3: Summary of Groundwater Analytical Results – VOCs
Table 4: Summary of Groundwater Analytical Results – SVOCs
Table 5 Summary of Groundwater Analytical Results – PCBs
Table 6 Summary of Groundwater Analytical Results – PAHs
Table 7 Summary of Groundwater Analytical Results – Metals
Table 8 Summary of Groundwater Analytical Results – Organochlorine Pesticides
Table 9 Summary of Groundwater Analytical Results – Tannin and Lignin

Figure 1: Vicinity Map
Figure 2: Groundwater Elevation Contour Map, Northern Section – December 7, 2004
Figure 3: Parcel 10 Groundwater Elevation Contour Map – December 7, 2004

Attachment A: Field Procedures
Attachment B: Field Data Sheets
Attachment C: Official Laboratory Reports and Chain-of-Custody Records

cc: Julie Raming, Georgia Pacific